

SUMMARY OF

GRASSLAND BASIN DRAINERS

DRAINAGE REDUCTION ACTIVITIES

AUGUST 28, 1997

TAB

- 1 Current Regulation of Grassland Basin
- 2 Data Summarizing Impacts of Selenium Load Reduction Actions
- 3 Activities Implemented by Irrigation and Drainage Districts in the Grassland Area To Comply with the Regional Board's Basin Plan for the Lower San Joaquin River and the Use Agreement for the Grassland Bypass Project

TAB 1

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D-043872

Current Regulation of Drainage Discharge from the Grassland Basin to the San Joaquin River

The drainage discharge is regulated in two areas, namely by the Regional Water Quality Control Board under the Basin Plan and by the terms of the Use Agreement for Use of the San Luis Drain.

Basin Plan

The Regional Board established a prioritized list of goals in the Basin Plan. Briefly these goals, listed in priority are: 1) Wetland protection within the grassland watershed, 2) Aquatic life protection in the wetland water supply channels, 3) Aquatic life protection in the San Joaquin River downstream of the Merced River confluence and, 4) Aquatic life protection in Mud Slough (north) and the San Joaquin River from Sack Dam to the Merced River inflow. A compliance schedule was established for meeting certain water quality objectives. In addition to the concentration objectives, the Basin Plan specifies that no more than 8,000 lbs/year of selenium be discharged from agricultural subsurface drainage systems from the Grassland watershed.

In addition, the Regional Board is in the process of adopting Waste Discharge Requirements for the discharge from the Grassland Bypass Project. These will be completed by October, 1998.

Substantial compliance with the Basin Plan has occurred with the implementation of the Grassland Bypass Project and the drainage reduction actions taken by the Grassland Farmers. Wetland protection within the Grassland Watershed as measured by the selenium concentrations in Salt Slough at Highway 165. Results from the Grassland Bypass Monitoring Program have indicated that a concentration of less than 2 ppb has occurred for the majority of the time. The exception is a period of a few days when high storm flows could not be accommodated in the Grassland Bypass in late January 1997. Aquatic life protection in the wetland water supply channels is evidenced by selenium concentrations below 2 ppb when deliveries are being made to wetland areas. There have been exceptions at times when low or nil flows occurred in wetland delivery channels and later summer periods. The source of these high selenium levels is not fully known. It is known that it is not coming from the drainage area contributing to the Grassland Bypass. It could be coming from areas outside of the drainage area that continue to discharge to Grassland Channels, seepage into channels from local perched water or seepage from the facilities that block drain water from entering the grassland channels. The Grassland Farmers will work closely with the Regional Board and the Grassland Water District and other agencies to identify and control these other sources.

Compliance with the final two goals in the Basin Plan, namely, Aquatic life protection in the San Joaquin River downstream of the Merced River confluence and, Aquatic life

protection in Mud Slough (north) and the San Joaquin River from Sack Dam to the Merced River inflow will be addressed in the long term plan for the drainage discharge anticipated to be completed by October 1998.

Use Agreement

A Use Agreement for the Grassland Bypass Project has been executed with the U. S. Bureau of Reclamation. The terms of the Use Agreement call for the following:

- ▶ Formation of a Regional Drainage Entity. This has been accomplished by the formation of an Activity Agreement (Joint Powers group) under the umbrella of the San Luis and Delta-Mendota Water Authority. Seven irrigation and drainage districts are members of the entity along with unincorporated lands.

- ▶ Formation of a Drainage Oversight Committee. This has been accomplished. The Oversight Committee is comprised of representatives from the U. S. Bureau of Reclamation, the U. S. Fish and Wildlife Service, the U. S. Environmental Protection Agency, the California Department of Fish and Game, and the Regional Water Quality Control Board. The

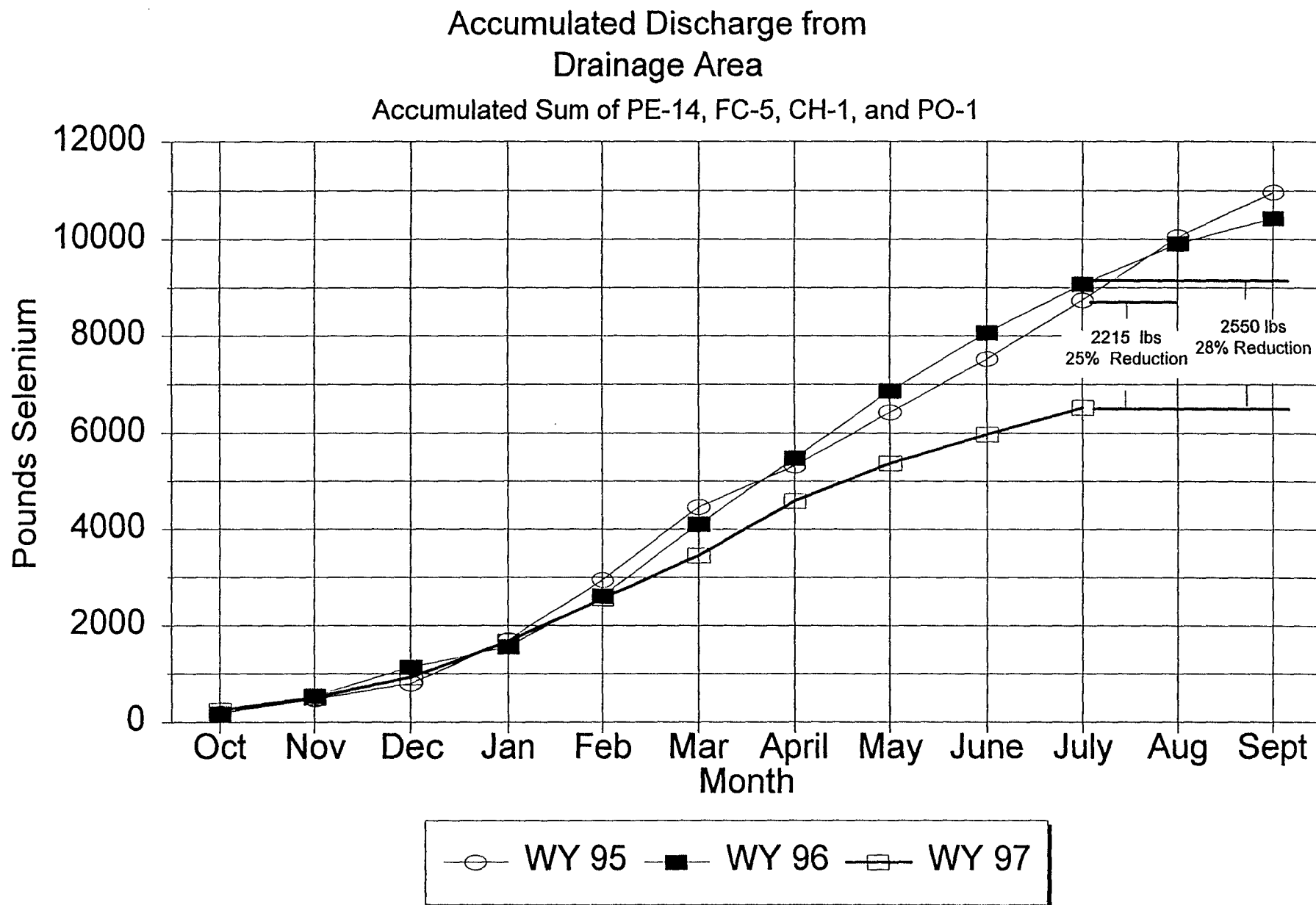
Oversight Committee is to make sure the Project is operated in accordance with the terms of the Use Agreement.

- Selenium load reduction assurances and fees. The project is strictly governed by load limits that take into account historic discharges and call for reduction of up to 15% from historic discharges in five years. There are provisions for incentive fees or fines if discharges exceed certain amounts. These reductions require the drainage area to reduce discharges by up to 50% to meet the downstream load limits.

TAB 2

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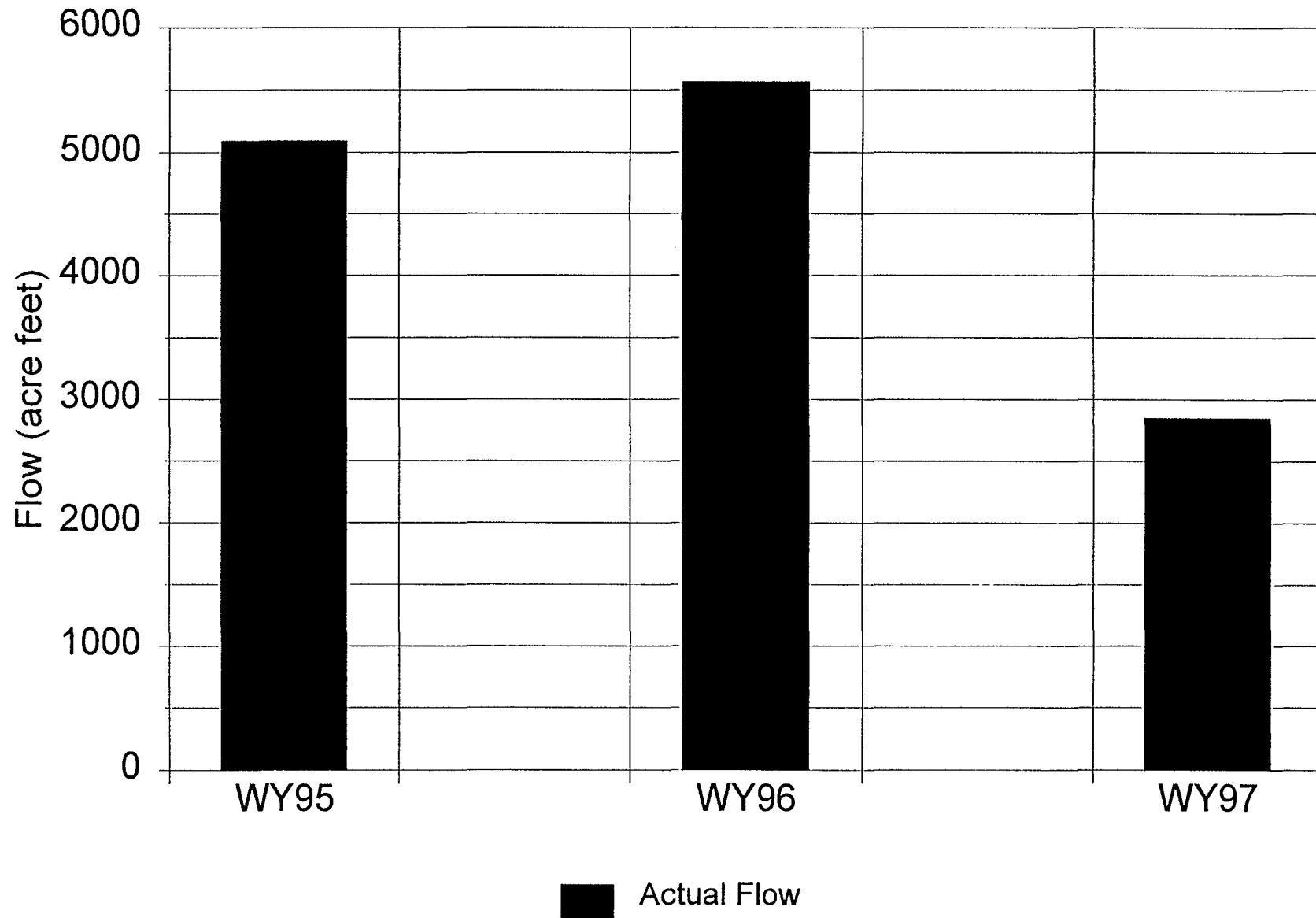
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Flow from Drainage Area

June

Sum of PE-14 and FC-5

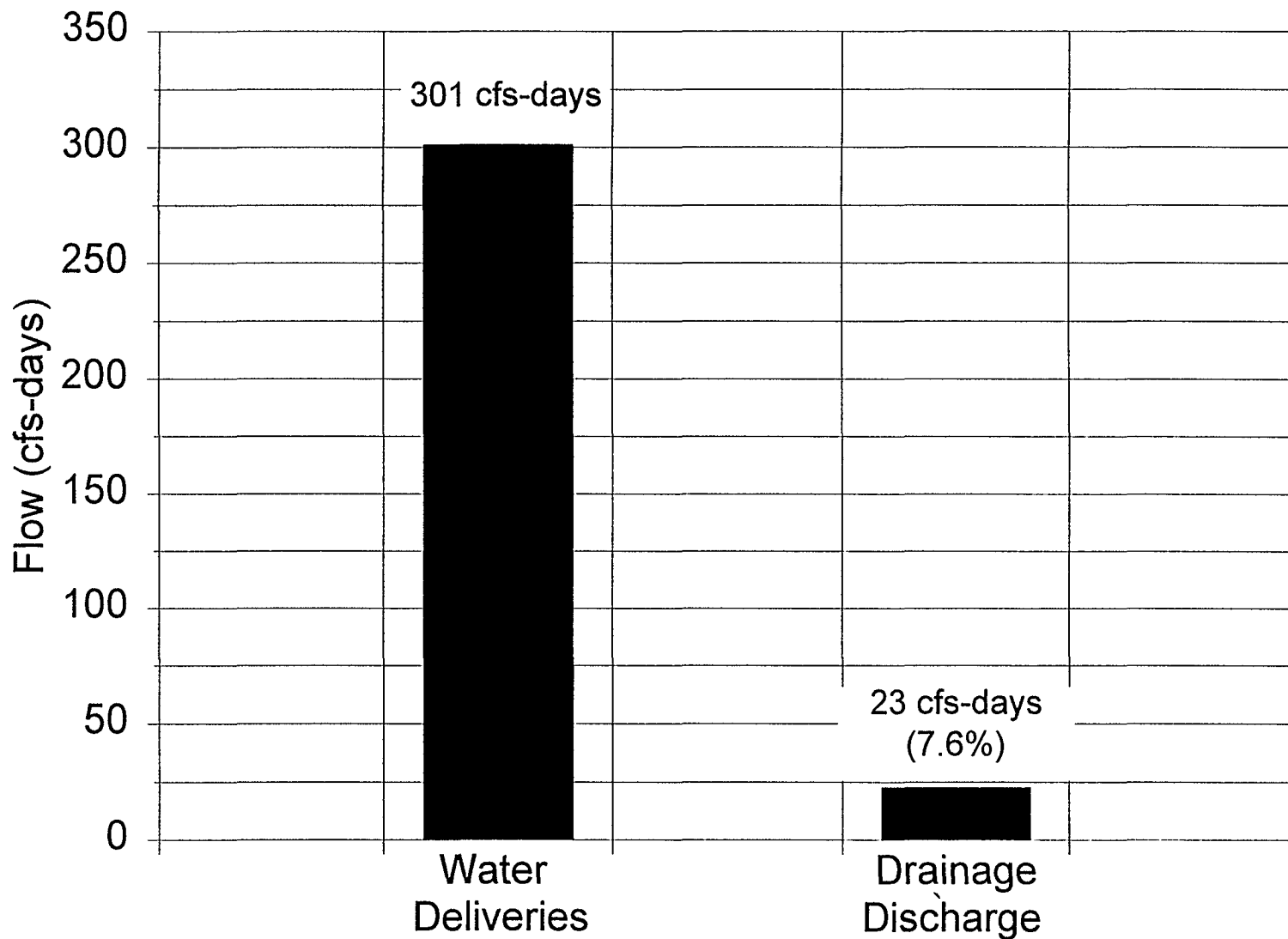


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Panoche Drainage District

Water Deliveries vs. Drain Discharge

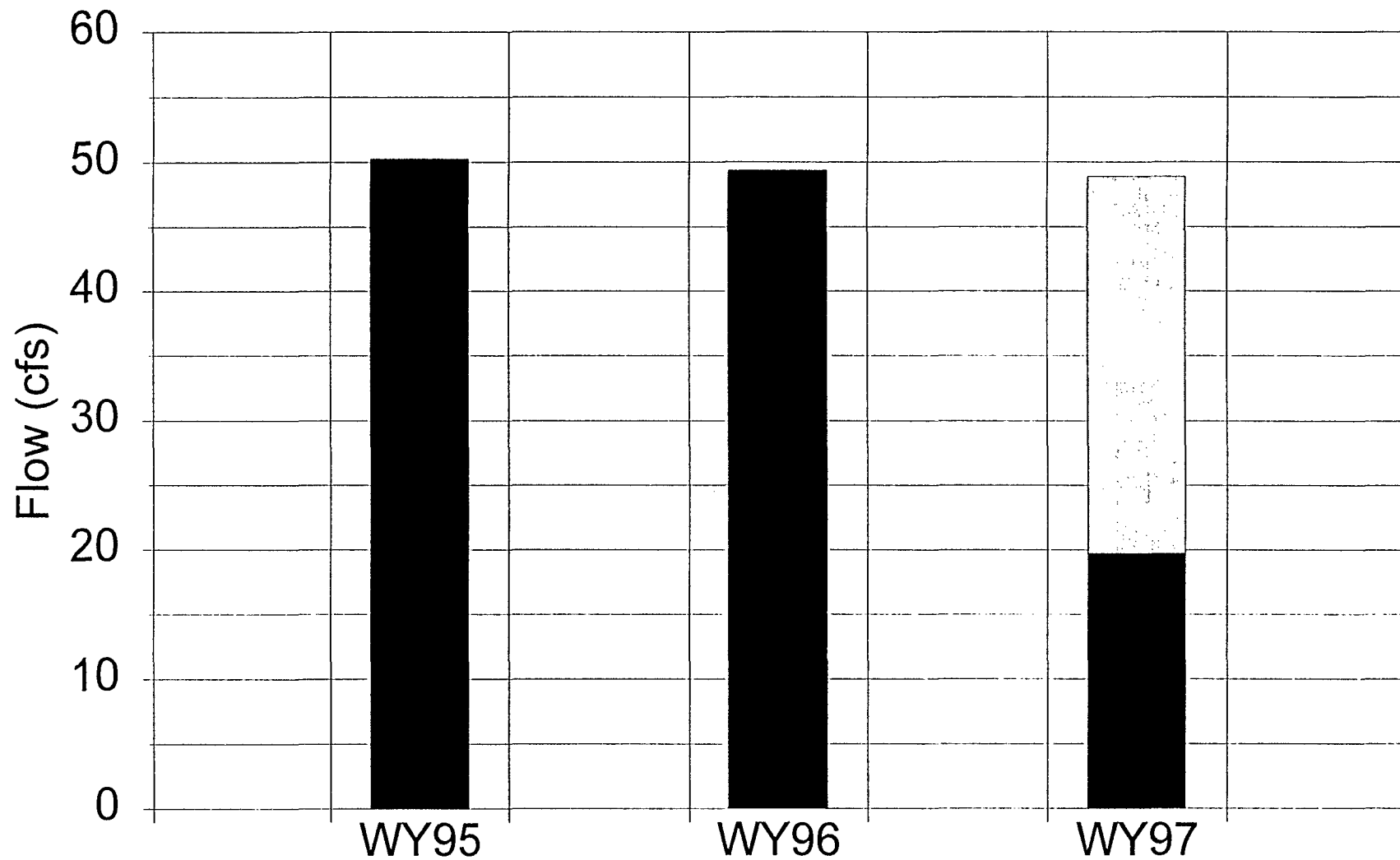
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Flow from Panoche Drainage District

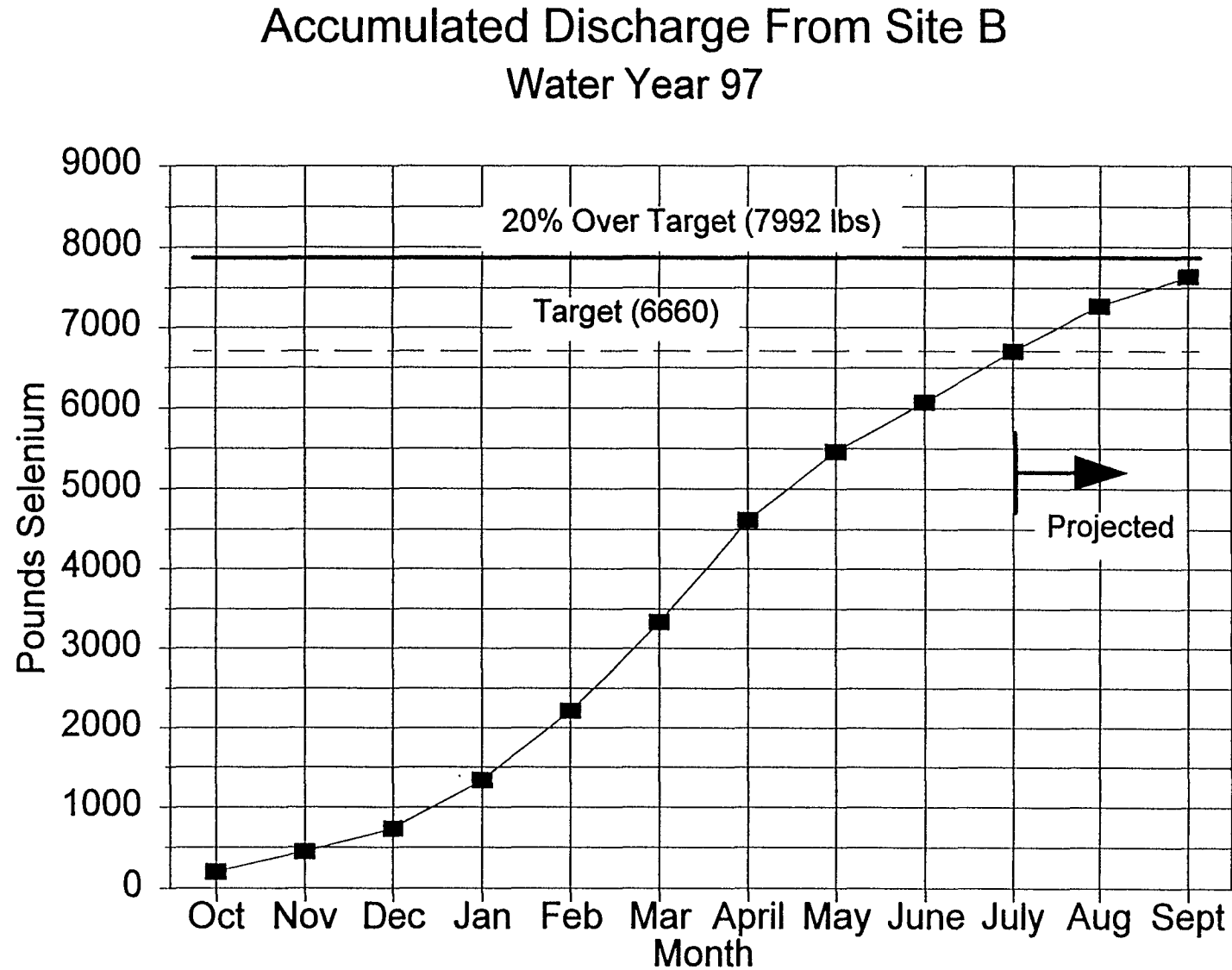
July 1

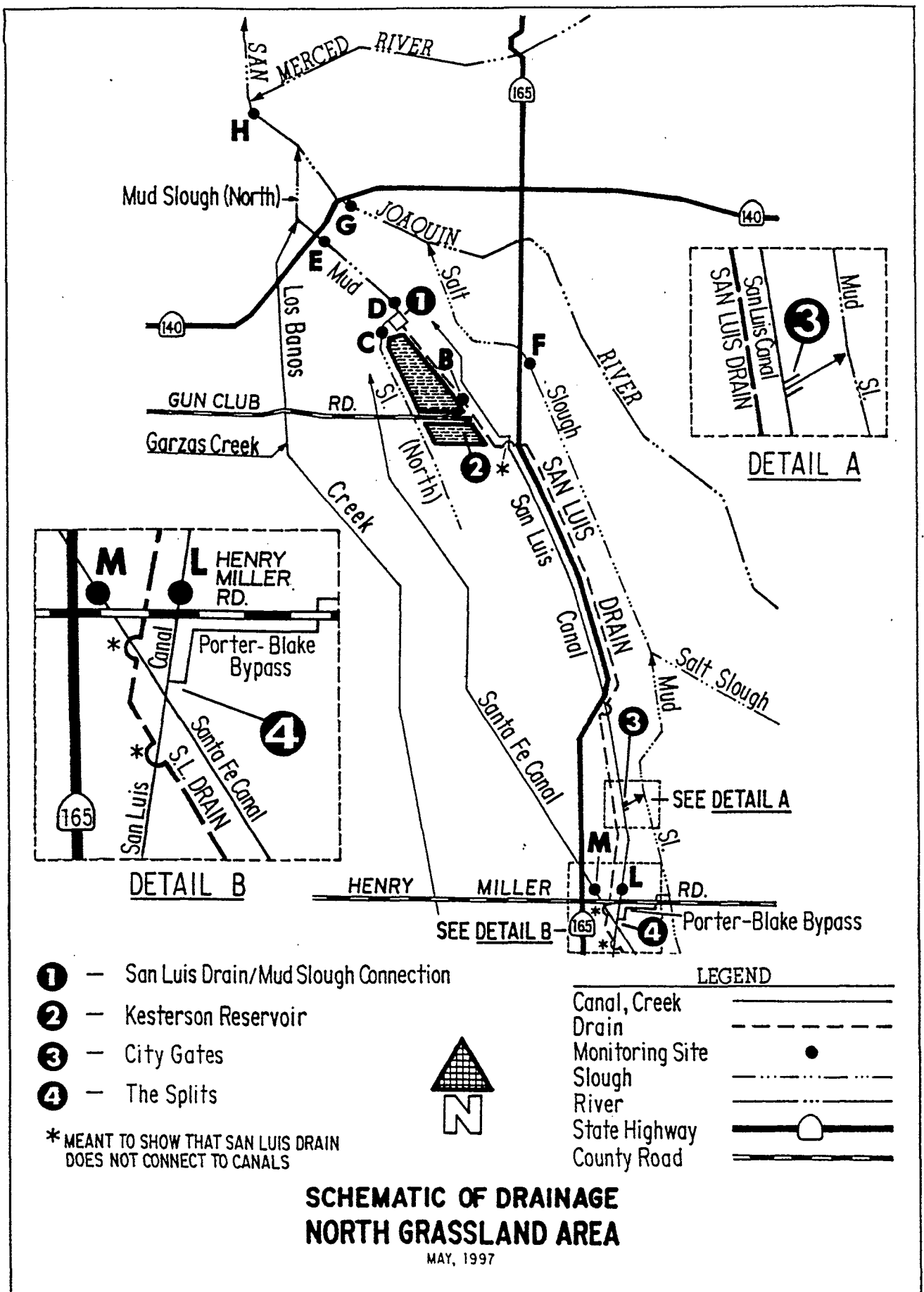


Actual Flow



Recirculation/Displacement





TAB 3

**Activities Implemented by
Irrigation and Drainage Districts
In the Grassland Area
To Comply with the Regional Board's
Basin Plan for the Lower San Joaquin River
and the Use Agreement for the Grassland Bypass Project** July 10, 1997

Irrigation and drainage districts have been working aggressively to achieve the water quality objectives for the San Joaquin River, Mud and Salt Sloughs, and water delivery channels in the Grassland Water District. The most recent amendment to the Regional Water Quality Control Board's Plan, adopted in May 1996, addresses agricultural irrigation and drainage issues in the region and includes a revised set of water quality objectives. In addition, the Use Agreement for the Grassland Bypass Project, signed in November 1995, sets parameters for implementation of that project. Many farm-level and district efforts to improve water quality have been ongoing for several years and additional efforts have been implemented in recent months, to achieve environmental commitments described in the Grassland Bypass Project. The goal is that the Project is consistent with water quality objectives in the Basin Plan.

A partial list of the farm-level, district, and regional efforts implemented to achieve Basin Plan water quality objectives and terms of the Use Agreement is presented below. The Grassland Area Farmers will continue to seek methods for achieving water quality objectives, while maintaining agricultural production in the region.

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1. The Grassland Basin Drainage Activity was formed in March 1996, within the San Luis & Delta-Mendota Water Authority. Participants in this regional drainage entity, also known as the Grassland Area Farmers, include the Broadview Water District, the Camp-13 Drainage Area, Charleston Drainage District, Firebaugh Canal Water District, Pacheco Water District, Panoche Drainage District, and Widren Water District. The Drainage Activity is governed by a Steering Committee that meets monthly. Meetings of district managers are conducted, as needed, to develop load reduction strategies.
 2. The Grassland Bypass Project was implemented in September 1996, to remove unusable agricultural drainage water from channels in the Grassland Water District. The Bypass Project greatly enhances the likelihood that Basin Plan water quality objectives for those channels will be achieved.
 3. The Steering Committee of the Grassland Area Farmers meets monthly to review the status of the Grassland Bypass Project and to recommend district-level and regional efforts that can be implemented to achieve environmental commitments that include substantial reductions in the load of selenium discharged monthly and annually to the San Joaquin River.

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4. A regional drainage coordinator has been employed to design and implement strategies that will assist farmers and districts with their efforts to reduce drainage water volume and selenium load.
 5. Most irrigation and drainage districts have made low-interest loans available to farmers for the purchase of gated pipe, sprinkler, and drip irrigation systems that will enhance water management and reduce drain water volume. Funds for these programs are made available by the State Water Resources Control Board and the Central California Irrigation District. Many farmers have upgraded their irrigation systems and management methods to reduce subsurface drain water and surface runoff in 1997.
 6. Most water districts in the Grassland Area have implemented tiered water pricing to encourage farmers to manage water deliveries carefully and to reduce drain water volume and selenium load. Several districts have targeted drain water reduction, specifically, by implementing a separate tiered pricing structure for preirrigations. The following programs are in place:

<u>Full-Season Program</u>	<u>Pre-Irrigation Program</u>
Broadview Water District	Broadview Water District
Firebaugh Canal Water District	Pacheco Water District

The Broadview and Firebaugh programs have been in place for several years. The pre-irrigation programs at Pacheco and Panoche Water Districts have been implemented since May 1996. Farmers in the Camp-13 Drainage Area purchase water from the Central California Irrigation District, which has had a tiered pricing program in place for several years. All of these programs have encouraged farmers to select efficient water management practices that reduce surface runoff and subsurface drain water in the 1997 crop year.

7. As a result of economic incentive programs, most farmers in the Grassland Area used sprinklers rather than surface methods to deliver pre-irrigations in late 1996 and early 1997.
8. The Monitoring Program for the Grassland Bypass Project, an intensive effort to verify compliance with environmental commitments, includes water quality analysis at many sites in the Grassland Area and the Lower San Joaquin River watershed. The Program also includes biological and toxicological analyses in the laboratory and at key sites in the region. The Grassland Area Farmers are

contributing more than \$200,000 to the annual cost of conducting this Monitoring Program.

9. The Grassland Area Farmers have also implemented a local water quality monitoring program that provides district managers and staff with daily estimates of drainage water volume and selenium loads at key sites in the region. These estimates are used to assess the impact of farm-level and district efforts to achieve monthly and annual selenium load targets. The annual cost of this program is about \$100,000.
10. Numerous workshops and meetings involving district managers, staff, and farmers have been conducted since the start of the Grassland Bypass Project. The goals of these meetings are to update farmers regarding drainage conditions and management efforts, to seek farm-level input regarding potential strategies to reduce drain water volume and selenium loads, to review new district policies, and to describe farm-level load reduction measures. More than 10 workshops have been conducted since May 1996.
11. A regional newsletter has been developed to inform all farmers about the Grassland Bypass Project, update them regarding regional selenium load reduction efforts, and describe farm-level efforts required to achieve load

reduction commitments. The first edition of the newsletter was published in February 1996 and nine editions have been published since May 1996.

12. The Grassland Area Farmers have implemented an Active Land Management Program in which land is leased from participating farmers and planted in crops that can utilize water in the high water table. Cultural practices and irrigation methods are selected with the goal of reducing drain water volume and selenium load. This program is being evaluated as an effective alternative to permanent land retirement. A proposal for funding a small-scale version of the Program in 1997 has been submitted to the Bureau of Reclamation. Four parcels (about 200 acres) have been selected for inclusion in the 1997 Program and active management practices have been implemented, beginning in April 1997.
13. Several irrigation and drainage districts have implemented a policy that requires farmers to recirculate their own surface runoff, rather than discharging that water into district drainage ditches. The goal is to encourage optimal farm-level water management efforts and reduce the total volume of drainage water in the regional drainage system. The Broadview Water District, the Firebaugh Canal Water District, and the Panoche Drainage District have implemented policies requiring farmers to eliminate or re-circulate surface runoff, since May 1996.

These districts represent more than 70,000 acres of the 94,700-acre region that is eligible for participating in the Grassland Bypass Project. The policies in Broadview and Firebaugh were not in place, prior to May 1996. Pacheco Water District adopted an interim policy limiting surface water discharges into District drains during 1997 and has adopted a policy requiring complete elimination of surface runoff discharges effective April 1998.

14. All districts in the Grassland Area have implemented an aggressive sump management program that includes more frequent measurement of the volume and quality of drain water discharged from drainage system sumps and periodic cycling of sump pumps to reduce the volume discharged, over time. Several districts have also modified the level of automatic floats in sumps to increase the volume of drain water stored in the soil profile, and reduce the volume discharged to district drainage ditches.
15. The Steering Committee of the Grassland Area Farmers has contacted all farmers operating on lands within the 97,400-acre region designated as eligible to use the San Luis Drain for transportation of drainage water, but not included within irrigation and drainage districts. These farmers have been advised that they must participate fully in the Grassland Bypass Project, in order to use regional drainage facilities.

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16. Most of the irrigation and drainage districts participating in the Grassland Bypass Project have increased their recycling of drainage water for blending with irrigation water deliveries, to reduce the volume of drainage water and the load of selenium discharged to regional drainage ditches. Some districts recycle more than half the subsurface drain water collected from drainage systems in some months. Re-circulation will become a primary control method as districts strive to achieve selenium load targets in those months. It is likely that all of the land in participating districts will be affected by this increase in re-circulation, as additional salts are carried in irrigation water and deposited on soils throughout the region.
17. District managers and staff are working with individual farmers to examine opportunities for recycling a portion of the subsurface drain water collected in farm-level sumps, before that water is discharged into district drainage ditches. In some cases, it may be possible for farmers to recycle both surface runoff and subsurface drain water, to assist districts in reducing drain water volume and selenium load. Farmers are also recycling subsurface drain water, in response to requests from District Managers for achieving selenium load targets.